Appendix 2: Risk of bias tables

Risk of bias results for randomised trials

Short Title	Reference	Selection and performance bias	Detection and attrition bias	Reporting and other bias
Little (2016)	Study ID	Random sequence generation	Blinding of outcome	Selective reporting
	• Reference	• Low risk	assessment*	• Unclear
	<i>Little 2016</i> ¹²		• Low risk	
			Blinded assessment of primary	
		Allocation concealment	care records	Anything else, ideally
		• Low risk		prespecified
				• Low risk
			Incomplete outcome data*	
		Blinding of participants and	• Low risk	
		personnel*		
		• Unclear		
Yardley (2010)	Study ID	Random sequence generation	Blinding of outcome	Selective reporting
	• Reference	• Low risk	assessment*	• Unclear
	<i>Yardley</i> 2010 ¹³		• Unclear	
		Allocation concealment		Anything else, ideally
		• Low risk	Incomplete outcome data*	prespecified
			• Low risk	• Low risk
		Blinding of participants and		
		personnel*		
		• Low risk		

Risk of bias results for cohort/cross-sectional studies

Reference	Questions 1-4	Questions 5-7	Questions 8-10
	1. Was the research question clearly stated?	5. Was a sample size	8. Were outcome measures clearly defined?
• Reference	• Yes	justification provided?	• Unclear
Backman A-S et al. 2012 ³⁰	The aims refer to "non-urgent" but the information is sought prior to visiting ED.	• No	"Health care information use in the past"
		6. Did the study	9. Were outcome assessors blinded?
	2. Was the study population clearly specified and	examine exposure	Not applicable
	defined?	levels?	
	• Yes	• Yes	
		Health advice seeking	10. Were confounders adjusted for? • Yes
	3. Was the participation rate at least 50%?		To some extent: participant and physician attributes
	• Yes	7. Were exposure	assessed for influence on the results.
	79%	measures clearly	
		defined?	
		• Unclear	
	4. Were all the subjects selected or recruited from	Measures are vague, e.g.	
	the same or similar populations?	"previous use" of	
	• Yes	information Also,	
	Primary care and ED attendees	discriminating between	
		types of information	
	1. Was the research question clearly stated?	5. Was a sample size	8. Were outcome measures clearly defined?
Reference	• Yes	justification provided?	• Yes
Carter 2018 ²⁶		• No	Attitudes and experiences of practice staff and

			patients on webGP.
	 2. Was the study population clearly specified and defined? Yes GPs, practice staff and their patients at 6 practices in Devon 	6. Did the study examine exposure levels?Not applicable	9. Were outcome assessors blinded?Not applicable
	 3. Was the participation rate at least 50%? No Postal survey only had response rate of 35.1% but also GPs judgement of webGP requests and 5GPs and 5 administrators were interviewed. 	7. Were exposure measures clearly defined?Not applicable	10. Were confounders adjusted for?Not applicable
	 4. Were all the subjects selected or recruited from the same or similar populations? Yes GPs, practice staff and their patients at 6 practices in Devon 		
• Reference Cowie 2018 ²⁷	1. Was the research question clearly stated? • Yes	5. Was a sample size justification provided? • No	8. Were outcome measures clearly defined? • Yes
	2. Was the study population clearly specified and defined?Yes	6. Did the study examine exposure levels? • No	9. Were outcome assessors blinded?• No10. Were confounders adjusted for?

	 3. Was the participation rate at least 50%? No No for patient surveys 4. Were all the subjects selected or recruited from the same or similar populations? Yes 	7. Were exposure measures clearly defined?Not applicable	• Yes
• Reference Joury et al. 2016 US ³¹	1. Was the research question clearly stated? • Yes	5. Was a sample size justification provided? • No	8. Were outcome measures clearly defined? • Yes Scores used for readability, popularity, content and quality
	2. Was the study population clearly specified and defined?Not applicable	6. Did the studyexamine exposurelevels?Not applicable	9. Were outcome assessors blinded?Not applicable
	 3. Was the participation rate at least 50%? Not applicable 4. Were all the subjects selected or recruited from the same or similar populations? Not applicable 	7. Were exposure measures clearly defined?Not applicable	10. Were confounders adjusted for?• Unclear
• Reference Kellermann 2010 11	1. Was the research question clearly stated?• Unclear2. Was the study population clearly specified and	5. Was a sample size justification provided?Not applicable	8. Were outcome measures clearly defined?Not applicable9. Were outcome assessors blinded?

	defined?	6. Did the study	Not applicable
	• Unclear	examine exposure	
	Patients with influenza-like illness in US that accessed	levels?	
	one of 2 websites http://www.flu.gov and www.H1N2	 Not applicable 	10. Were confounders adjusted for?
	ResponseCenter.com		Not applicable
	3. Was the participation rate at least 50%?Not applicable	7. Were exposure measures clearly defined? • Not applicable	
	 4. Were all the subjects selected or recruited from the same or similar populations? • Unclear Only counted web hits, no demographic data available on patients. No data on usage of algorithm by clinicians or call centers. 		
	1. Was the research question clearly stated?	5. Was a sample size	8. Were outcome measures clearly defined?
Reference	• Yes	justification provided?	• Yes
Lanseng &	165	• No	Use of TRI
Andreassen			
2007	2. Was the study population clearly specified and		
Norway ³²	defined?	6. Did the study	9. Were outcome assessors blinded?
	• Yes	examine exposure	• No
		levels?	
		• No	
	3. Was the participation rate at least 50%?	Readiness	10. Were confounders adjusted for?
	• Unclear		• Unclear
		7. Were exposure	

D.C.	 4. Were all the subjects selected or recruited from the same or similar populations? Yes 1. Was the research question clearly stated? 	measures clearly defined? • Not applicable 5. Was a sample size	8. Were outcome measures clearly defined?
• Reference Luger et al. 2014 ²³	• Yes	justification provided? • No	• Yes
	2. Was the study population clearly specified and defined?Yes	6. Did the study examine exposure levels?	9. Were outcome assessors blinded?Not applicable
	3. Was the participation rate at least 50%?• Unclear	• No 7. Were exposure	10. Were confounders adjusted for?Unclear
	4. Were all the subjects selected or recruited from the same or similar populations?Yes	measures clearly defined? • Not applicable	
• Reference Marco-Ruiz et al. 2017	1. Was the research question clearly stated? • Yes	5. Was a sample size justification provided? • No	8. Were outcome measures clearly defined? • Not applicable
Norway ²⁴	2. Was the study population clearly specified and defined?No	6. Did the study examine exposure levels? • No	9. Were outcome assessors blinded?Not applicable10. Were confounders adjusted for?
	3. Was the participation rate at least 50%?		• Unclear

	 Yes 53% 4. Were all the subjects selected or recruited from the same or similar populations? Unclear 	7. Were exposure measures clearly defined? • Not applicable	
• Reference Nagykaldi 2010 ²⁵	1. Was the research question clearly stated? • Yes	5. Was a sample size justification provided? • Not applicable	8. Were outcome measures clearly defined? • Yes Web hits on customised practice website influenza self-management webpages. Downloads of self-
	 2. Was the study population clearly specified and defined? Yes Study population was patients from 12 primary care practices in US. 	6. Did the study examine exposure levels?Not applicable	management influeza toolkit. Completion of Iflueza self-triage module sessions. Volume of calls to telephone hotlines. Qualitative feedback from patients on statisfaction with and utility of self-management websites and telephone hotline. Qualitative feedback from clinicians around their involvement and their perceptionsof patient self-management techniques.
	3. Was the participation rate at least 50%?Not applicable4. Were all the subjects selected or recruited from	7. Were exposure measures clearly defined?Not applicable	9. Were outcome assessors blinded?Not applicable
	the same or similar populations? • Yes All participants were patients from 12 primary care practices that accessed customised practice website or telephone helpline		10. Were confounders adjusted for?Not applicable

1. Was the research question clearly stated?	5. Was a sample size	8. Were outcome measures clearly defined?
• Yes	justification provided?	• Yes
	• No	
		9. Were outcome assessors blinded?
	6. Did the study	• No
• Yes	examine exposure	
	 Not applicable 	10. Were confounders adjusted for?
3. Was the participation rate at least 50%?		• Yes
• Unclear		Methods not very clearly reported but appears to be
	7. Were exposure	multiple regression
	measures clearly	
4. Were all the subjects selected or recruited from	defined?	
the same or similar populations?	 Not applicable 	
• Yes		
1. Was the research question clearly stated?	5. Was a sample size	8. Were outcome measures clearly defined?
• Yes	justification provided?	• Yes
	• No	
2. Was the study population clearly specified and		9. Were outcome assessors blinded?
	6. Did the study	• No
• Yes		
	<u> </u>	
		10. Were confounders adjusted for?
3. Was the participation rate at least 50%?	11	• Unclear
• No		
	7. Were exposure	
	_	
1		
	 Yes 2. Was the study population clearly specified and defined? Yes 3. Was the participation rate at least 50%? Unclear 4. Were all the subjects selected or recruited from the same or similar populations? Yes 1. Was the research question clearly stated? Yes 2. Was the study population clearly specified and defined? Yes 3. Was the participation rate at least 50%? 	• Yes 2. Was the study population clearly specified and defined? • Yes 3. Was the participation rate at least 50%? • Unclear 4. Were all the subjects selected or recruited from the same or similar populations? • Yes 1. Was the research question clearly stated? • Yes 5. Was a sample size justification provided? • No 2. Was the study population clearly specified and defined? • Yes 5. Was a sample size justification provided? • No 2. Was the participation rate at least 50%? • No 3. Was the participation rate at least 50%? • No Low participation rate in survey relative to users of 7. Were exposure measures clearly defined? • Not applicable 5. Was a sample size justification provided? • No 6. Did the study examine exposure levels? • Not applicable

		Not applicable	
	4. Were all the subjects selected or recruited from the same or similar populations?Yes		
• Reference North et. al. 2011 ³⁴	1. Was the research question clearly stated? • Yes	5. Was a sample size justification provided?Not applicable	8. Were outcome measures clearly defined? • Yes
	2. Was the study population clearly specified and defined?Yes	6. Did the study examine exposure levels? • Yes	9. Were outcome assessors blinded?Not applicable
	3. Was the participation rate at least 50%?Not applicable	• Yes Self-exposure	10. Were confounders adjusted for?UnclearSome discussion of potential confounders.
	4. Were all the subjects selected or recruited from the same or similar populations?Not applicable	7. Were exposure measures clearly defined?Not applicable	
• Reference Sole 2006 ¹⁸	 1. Was the research question clearly stated? Yes "The primary purpose of this study was to identify and describe the demographic profile of students who used 	5. Was a sample size justification provided? • No	8. Were outcome measures clearly defined? • Not applicable
	the newly implemented Web-based triage system. A secondary purpose was to compare Web-based triage diagnoses to the diagnoses made in clinic for a subset	6. Did the study examine exposure	9. Were outcome assessors blinded?Not applicable

of students who	requested appointments"	levels?	10. Were confounders adjusted for?
		• Yes	Not applicable
2. Was the stud	dy population clearly specified and		
defined?	ay population clearly specified and	7. Were exposure	
• Yes		measures clearly	
Students who us	sed the web based triage over a four	defined?	
month impleme	ntation period (1290 students). Then of	• Yes	
those students,	those who requested an appointment via		
email (143 stud	lents), then of those 59 who attended the		
health centre a	fter requesting an email appointment.		
3. Was the par • Not applicable	rticipation rate at least 50%?		
4. Were all the	subjects selected or recruited from		
the same or sin	milar populations?		

Risk of bias results for diagnostic studies

Reference	Questions 1 to 4	Questions 5 to 8	Questions 9 to 11
Study ID	1. Representative spectrum?	5. Differential	9. Relevant clinical information?
•	• No	verification	• Yes
Reference	Study participants were all patients registered at a student	avoided?	
Poote	health centre in England attending with new acute	Not applicable?	
			10. Were uninterpretable results reported?

2014 17	symptoms. If the self-assessment triage system was only		Not applicable
	for students to be representative the study population		
	would have needed to include range of student health	6. Was the	
	centres in different areas. If the system was for any UK	reference standard	11. Were withdrawals from the study explained?
	general practices the study population would have needed	independent of the	• Yes
	to include patients of all ages, ethnicity, gender etc from a	index test?	
	range GP practices in different areas.	• Unclear	
		Patients took the	
		assessment from self-	
	2. Acceptable reference standard?	triage through to	
	• Yes	their GP	
		consultation.	
	2. A goontoble delay between tests?		
	3. Acceptable delay between tests? • Yes	7 1-14414	
	• 1 es	7. Index test results blinded?	
		• No	
	4. Partial verification avoided?	Patients took the	
	• Yes	assessment from self-	
	All patients that completed self-triage also had a GP	triage through to	
	consultation where the GP rated the urgency of their	their GP	
	consultation.	consultation.	
	consultation.	Consultation.	
		8. Reference	
		standard results	
		blinded?	
		• Yes	
Study ID	1. Representative spectrum?	5. Differential	9. Relevant clinical information?

•	• No	verification	• Yes
Reference	SORT was only trialled in 2 Emergency Departments in	avoided?	
Price 2013	US, a larger range would be needed for a representative	• Not applicable?	
20	spectrum. Also, patients were from ED not home so		10. Were uninterpretable results reported?
	potentially sicker patients in the sample.		Not applicable
	percurancy scenes parterns in the samples	6. Was the	- Service - Serv
		reference standard	
	2. Acceptable reference standard?	independent of the	11. Were withdrawals from the study explained?
	• Yes	index test?	• No
	Sensitivity of SORT for kids algorithm in identifying the	• Yes	
	need for ED care was based on an explicit gold standard:	103	
	documented evidence that the child received 1 or more of		
	5 ED-specific interventions.	7. Index test results	
	5 LD-specific interventions.	blinded?	
		• Yes	
	3. Acceptable delay between tests?	1 03	
	• Yes		
	163	8. Reference	
		standard results	
	4. Partial verification avoided?	blinded?	
	• Yes	• Yes	
	165	1 65	
Study ID	1. Representative spectrum?	5. Differential	9. Relevant clinical information?
•	• Unclear	verification	• Yes
Reference	There were 45 standardised patient vignettes which were	avoided?	This is the clinical information that would be supplied by
Semigran	divided into three levels of triage urgency and included	• Not applicable?	the patient which may or may not differ from the
2015 4	more and less common conditions. It is not clear how		information given by the vignette.
	closely this replicates the spectrum of conditions that		[#548 Semigran 2015.pdf] Page 8: ion of the true clinical
	people use symptom checkers for.	6. Was the	accuracy of symptom checkers.33 Some standardized
		reference standard	patient vignettes con-tained specifc clinical language (for
		independent of the	

	2. Acceptable reference standard?	index test?	example, mouth ulcers, tonsils with exudate), and actual
	• Yes	• Yes	patients with the same condition might struggle with the
	[#548 Semigran 2015.pdf] Page 2: The source for each		words to use to describe their symptoms or use diferent
	vignette also provided the associated correct diagnosis.		terms. Therefore, our analysis represents an indirect
		7. Index test results	assess- ment of how well symptom checkers would perform
		blinded?	with actual patients
	3. Acceptable delay between tests?Not applicable	• Yes	
			10. Were uninterpretable results reported?
		8. Reference	• Yes
	4. Partial verification avoided?	standard results	[#548 Semigran 2015.pdf] Page 3: ns for diagnosis and
	Not applicable	blinded?	triage was high (Cohen's κ 0.90). In some cases we could
		• Yes	not evaluate a vignette because some symptom checkers
			focus only on children or on adults or the symptom checker
			did not list or ask for the key symp- tom in the vignette. To avoid penalizing these symptom checkers, we referred to standardized patient vignettes that successfully yielded an output as "standardized patient evaluations."
			11. Were withdrawals from the study explained?Not applicable
Study ID	1. Representative spectrum?	5. Differential	9. Relevant clinical information?
•	• Unclear	verification	• Yes
Reference	There were 45 standardised patient vignettes which were	avoided?	The physicians and the symptom checkers used the same
Semigran	divided into three levels of triage urgency and included	• Not applicable?	vignettes
2016 8	more and less common conditions. It is not clear how		
	closely this replicates the spectrum of conditions that		
	people use symptom checkers for.	6. Was the	10. Were uninterpretable results reported?

	reference standard	Not applicable
	independent of the	
2. Acceptable reference standard?	index test?	
• Yes	 Not applicable 	11. Were withdrawals from the study explained?
		• No
		It is unclear why the physicians chose to solve the specific
3. Acceptable delay between tests?	7. Index test results	vignettes
• Not applicable	blinded?	
	• Yes	
4. Partial verification avoided?		
• No	8. Reference	
There was a total of 234 physicians involved in the study	standard results	
and of the 45 vignettes, each was solved by at least 20	blinded?	
physicians but it is not clear why they chose the specific	• Yes	
vignettes to solve.		